# INTT量産に伴う
# 評価方法の統一について
# （テストベンチ４か所）

NWU：森田美羽

# 評価基準に対する認識

責任者はシェウェイ



**台湾、BNLチーム**

ー＞チェンウェイの解析方法で最終決定、解析を進めている

1. 閾値付近の立ち上がり幅
2. 各チャンネルの全エントリー
3. Un-bondedとbondedを見分ける
4. Ampl > 45のエントリー数

台湾、BNLチームは
評価基準を求める方法を
変えたくないと考えている

Classification についてのミーティングが必要？

**理研、奈良女チーム**

ー＞まだ考えている段階（？）だと思っている

1. エラー関数のフィット（パラメータσ、立ち上がりの中間値（threshold））
2. あるampl以上のレート
3. あるampl以上のエントリー
4. ADC vs amplのスロープ、オフセット

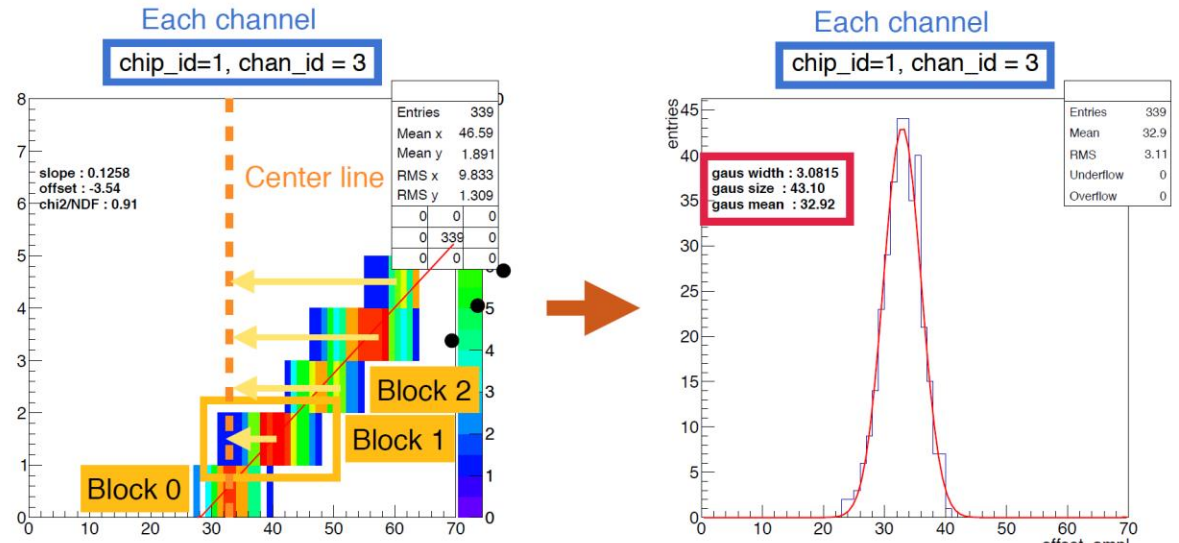
などを行ってきたが、、、

今決まっていないのは、センサーの評価方法
センサーの評価方法は並本さんの線源測定結果による

# Back Up

# Algorithm introduction : width

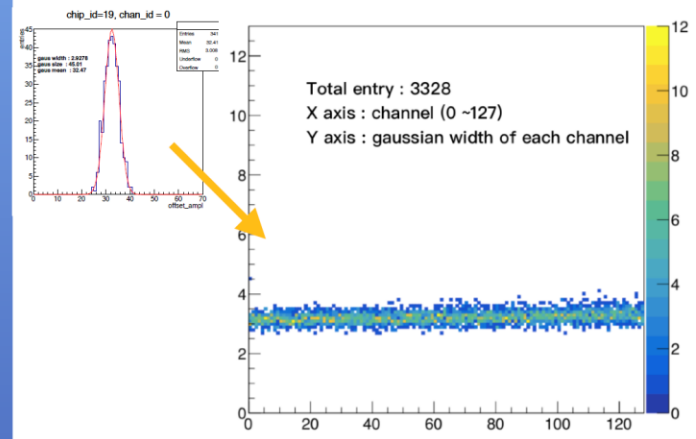
- For each channel of each chip :
  - Center line : average of events in “Block 0” (ADC==0)
  - Centers of the rest blocks are aligned to center line.
    - Amount of movement : Mean of each block - center line
  - Each event is filled in TH1F, and fit with gaussian.

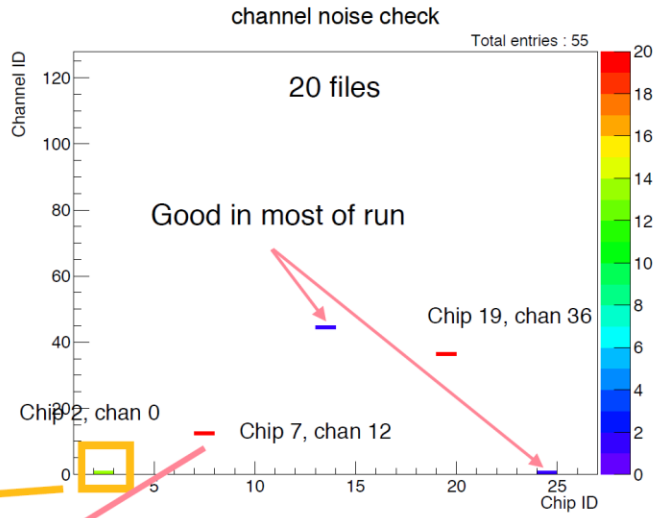


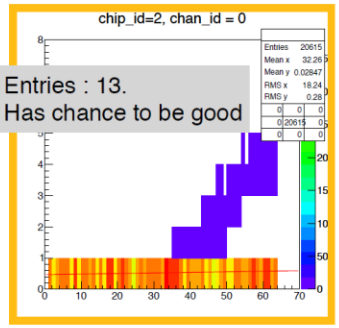

X axis : amp,
Y axis : ADC

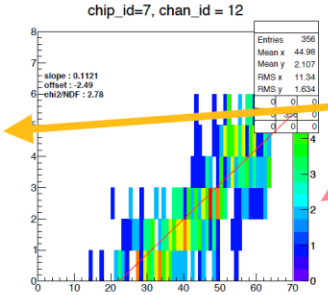
# Algorithm introduction : width

The Gaus width of most channels are less than 4
Gaus width > 4 will be shown in right plot



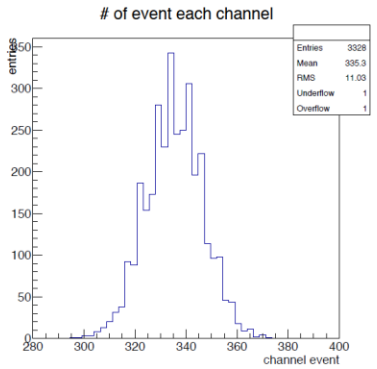



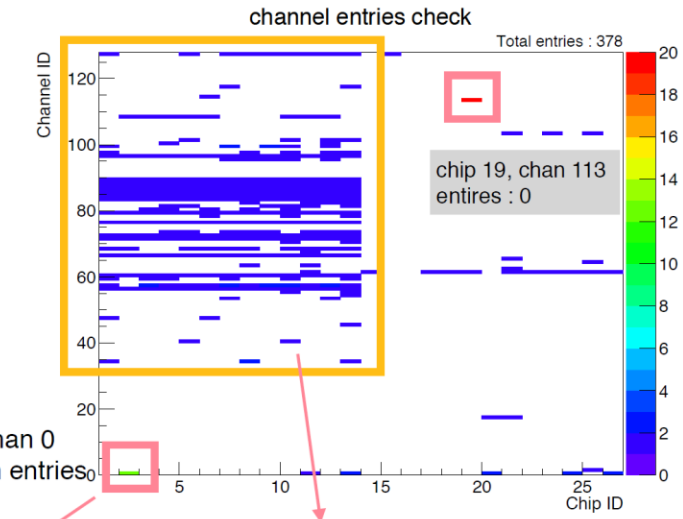

The less entries in plot, better performance it is.

# Algorithm introduction : entry

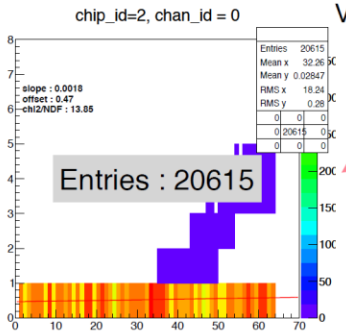
# of event of each channel ~ 330

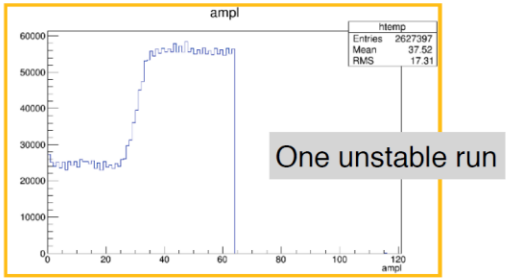



# of event > 400 or < 280 will be filled in the plot




chip 2, chan 0
Very high entries

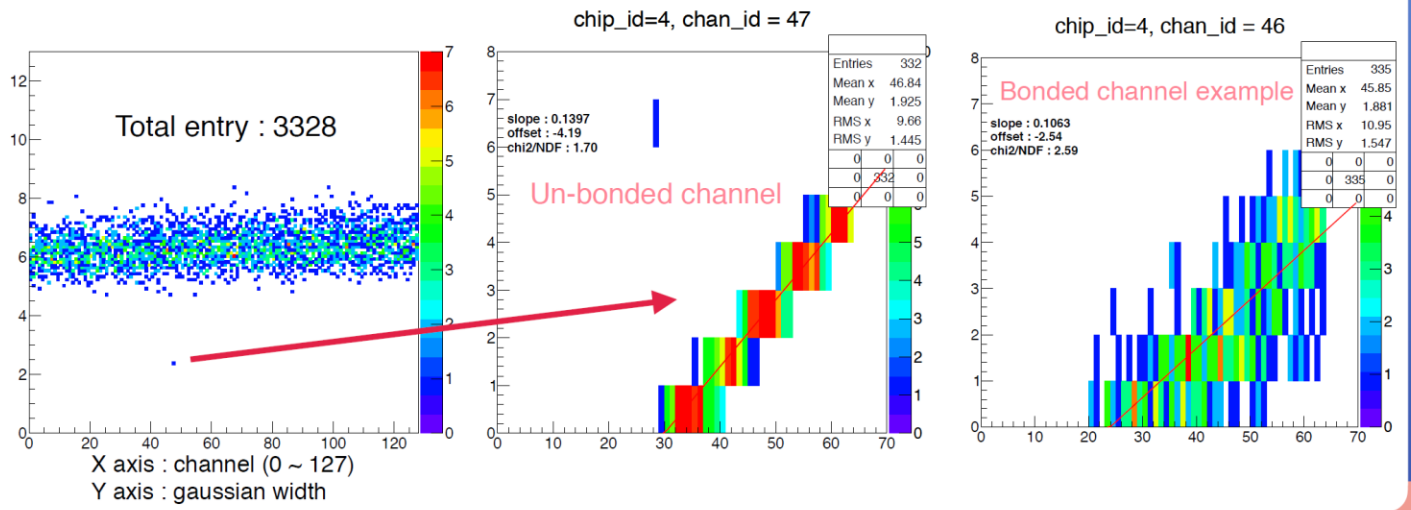


# Algorithm introduction : un-bonded channel (I am working this)

- The un-bonded channel should be considered as bad channel, it can be checked by running calibration test without bias voltage.
- One un-bonded channel was found in BNL ladder (PPB2-L2N)
  File : fphx_raw_20210212-0942_0.dat

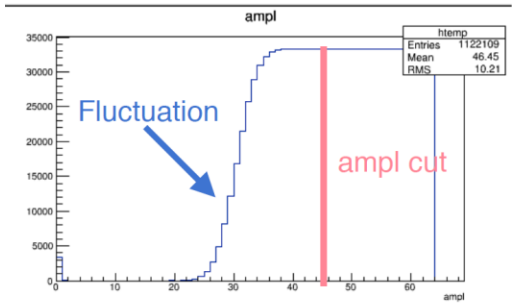
Calibration file without bias voltage



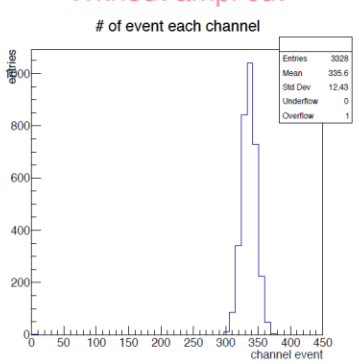
# Algorithm introduction : ampl cut (not use so far)

- New entry criteria candidate : applying a ampl cut.

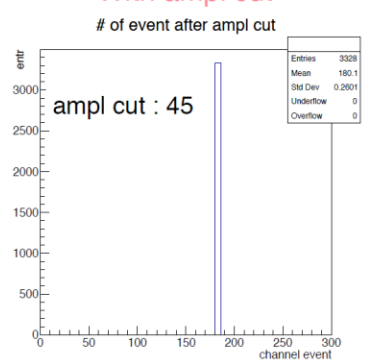
The width of gaussian is mainly contributed by the fluctuation around DAC0.

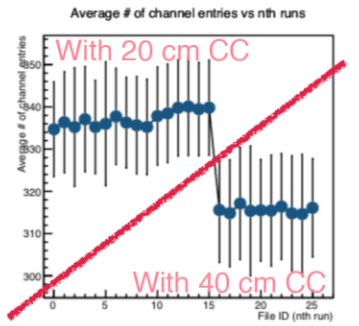


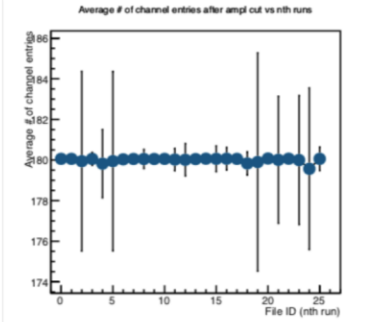

Without ampl cut




With ampl cut



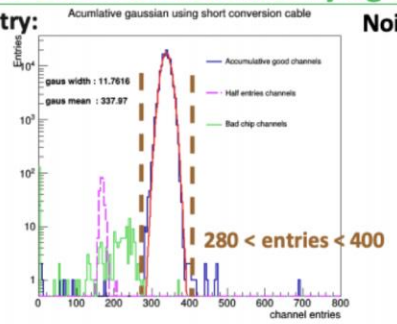



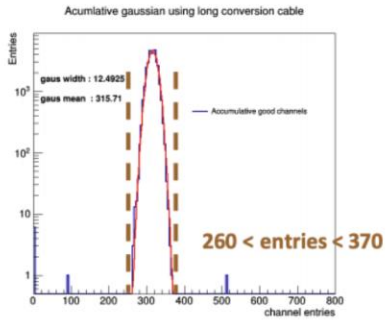
# Slide from Han-Sheng

## Classification for ladders

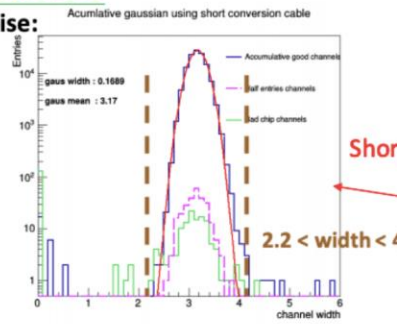
### STEP 1. Criteria for classifying ladders

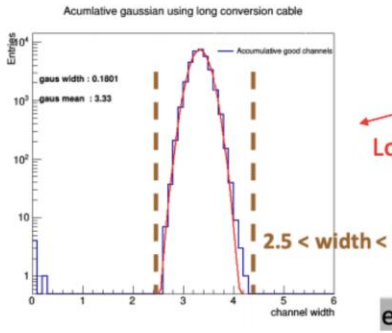
**Entry:**



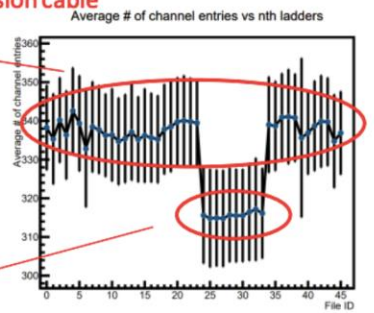

**Noise:**




The framework of classification done by Cheng-Wei

Short conversion cable




Long conversion cable

The channel width distribution comes from amplitude gaussian fit using all the channels.

eng Li 20210720@Weekly Meeting 2

# Summary of channel classification

- In my algorithm, so far there are 4 approaches : width, entry, un-bonded & ampl cut.
  - Criteria “width” & “entry” are used now. I plan to integrate “un-bonded” into the marco.
  - The ampl cut is not used now.

- The number of width and entry criteria is checked by Han-Sheng, based on my macro and BNL ladders.

# Sensor performance classification

- The radioactive source is not allowed in the room where Testbench is, this room is near to the ladder assembly room.
- The radiation-available room is in another building.
- Missing component for second Testbench system : FEM-IB

- Feasible solution :
  1. Produce FEM-IB domestically.
  2. Set up the Testbench in radiation-available room without “FEM-IB”. We switch one FEM-IB between 2 Testbenchs.
  3. Ship the ladders to JP to do sensor performance classification.
  4. Do the sensor performance classification by cosmic test with large scintillator -> depends on classification criteria.